SOUNDTRACKS FOR AUDIO VISUAL PRESENTATIONS

A GUIDE

BY

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CONTENTS

Preface.	3
Introduction.	4
Obtaining a track from a music CD	4
Obtaining a track from a cassette tape.	5
Shortening a music track	8
Field Recording	9
Recording equipment	10
Some things to consider when making a recording	13
Editing a commentary	14
Creating a soundtrack using Reaper	15
Editing in Reaper	21
Effects and processes in Reaper	22
Play Time	26
Conclusion	27
Appendix	28
Creating an audio CD in Reaper	29
Sources of programs mentioned in this document	31

Preface

My objective here is to help you to produce soundtracks to add to your Audio Visual (AV) presentations. There are a number of computer programs available that will enable you to produce AVs. The two most popular in our club are Pictures to EXE and ProShow Gold. Using this software has been, or will be, described by other members of the club.

Software for audio production is readily available and ranges in price from free to many hundreds of pounds. The main program that I will use in this guide is called Cockos Reaper. The license for non-commercial use, at the time of writing, costs $50 US. For what this program offers I consider this to be an absolute bargain. You can download an “un-crippled” copy of Reaper and use it forever without buying a license . The developers rely on your sense of fair play. Even more of a bargain is a program called Audacity, it’s free. I am not very familiar with Audacity but it may become the subject of a write-up sometime in the future.

Details of how to obtain these and other programs mentioned in this guide are shown in the Appendix.

Programs such as Reaper, Audacity, Cubase, ProTools etc., are referred to as audio sequencers or Digital Audio Workstations (DAWs). Audiograbber and the like are called rippers. Wavepad and Wavosaur are audio editors. I mention this in case you wish to trawl the Internet for other audio programs.

A number of assumptions have been made in this guide. They are: that you have a personal computer running under Microsoft Windows, that you have a sound card installed on your computer, that you have a means of listening to the sounds produced by your computer (loudspeakers or headphones), that you have a Compact Disk (CD) drive installed on your computer.

If you intend to use commercial recordings in your AVs please ensure that you have the appropriate license. See Dave Gillow’s write-up on the member’s area of the club web site.

All trade marks mentioned in this guide are acknowledged.

I have tried to make this guide as clear and as uncomplicated as possible but, if you think I have failed miserably, please let me know where I have gone wrong and I will try to do better next time.

Please also bear in mind that I have not been long at this recording lark and that I am self taught so, if you know a better way of doing things do tell me, I would love to know how to do it properly.

A feeling is creeping up that this may become my large Irish cat, my magnum opus.

Allan Brinkworth
2009

Introduction

A well thought-out and well produced soundtrack will enhance your AVs considerably. Try watching a television programme with the sound turned off. Does it make much sense? If it is a soap opera it will probably make more sense but I may be a little prejudiced there. Another test of the efficacy of a soundtrack is to show your friends your holiday pictures giving no explanation of what they are or where they were taken. How long does it take for them to glaze-over? If it's more than five minutes you have got some good friends, hang on to them. Now try showing them the same pictures with explanations of what they are looking at. You should be able to hold their attention for a good few minutes longer. So it is with AVs. A good, varied soundtrack will hold their interest for some considerable time.

'Hold on' I hear you cry, 'isn't it difficult to produce a soundtrack?' I think the answer is yes and no. To add a straight forward music track from a CD or tape is not that painful. Using sound effects and speech is more demanding but isn't it worth suffering for your art?

OK, let us start with the easier stuff and then move on to the more taxing material.

Obtaining a track from a music CD

Problem. How do I get a tune from my music CD onto my computer?

Answer. Easily. It's called ripping (no, not as in Mills and Boon).

Here is how it is done (by me at least). Search the internet for a program called AUDIOGRABBER latest version and download it, along with LAME MP3 DLL, both programs are available from the same web site and they are freeware. Install Audiograbber and the LAME encoder as per instructions on the download page of the web site.

Run Audiograbber. Place your music CD in the disk drive. Close Windows Media Player that is almost bound to start playing the CD. The tracks on the CD will appear on screen in Audiograbber.

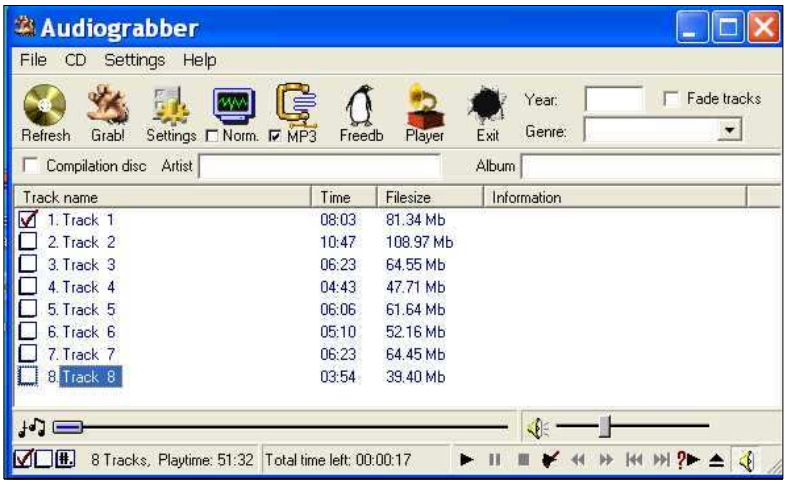

Audiograbber
File CD Settings Help
Refresh Grab! Settings Norm. MP3 Freedb Player Exit
Year: Fade tracks
Genre:
Compilation disc Artist
Album
Track name Time Filesize Information
1. Track 1 08:03 81.34 Mb
2. Track 2 10:47 108.97 Mb
3. Track 3 06:23 64.55 Mb
4. Track 4 04:43 47.71 Mb
5. Track 5 06:06 61.64 Mb
6. Track 6 05:10 52.16 Mb
7. Track 7 06:23 64.45 Mb
8 Track 8 03:54 39.40 Mb
8 Tracks, Playtime: 51:32 Total time left: 00:00:17

Fig 1. Audiograbber screen shot.

Make sure that the track you want is the only one ticked. Select the MP3 box on the toolbar. Open settings on the toolbar. Under General Settings select the folder you wish the file to be saved to using Browse. Tick OK. Click on Grab in the toolbar. The track will be saved to disk as an MP3 file. Add the MP3 to your AV. Job done.

Obtaining a track from a tape recorder

Problem. How do I get a tune from a cassette tape onto my computer?

Answer. With a little more difficulty than getting a track from a CD, but here goes.

You will need to connect your tape recorder to your computer with a cable. The type of cable depends on the output socket or sockets on your tape recorder. If the recorder has a stereo headphone output use a mini-jack plug (3.5mm) to mini-jack plug stereo cable (most computers use stereo mini-jack plug input sockets). See fig 2. If your recorder uses two phono sockets for output you will need a stereo mini-jack plug to two phono plugs cable. See fig 3.

Fig. 2. Stereo mini-jack to mini-jack

Fig. 3. Stereo mini-jack to phono

Plug one end of the cable into your recorder and the other end into your computer sound card, this socket is usually marked with a representation of a microphone.

We now need a computer program. Download from the internet a free program called WAVEPAD and install. Open Wavepad, turn on your tape recorder and insert the cassette tape.

It will be necessary to set-up Wavepad so that we can record from the tape. In the tool bar click on Options, click on Audio Processing, under Audio Working Folder click on Use this specified folder. Click on the small box with three little dots in it and navigate to the folder where you want to save your files. Click OK when done. See fig 4.

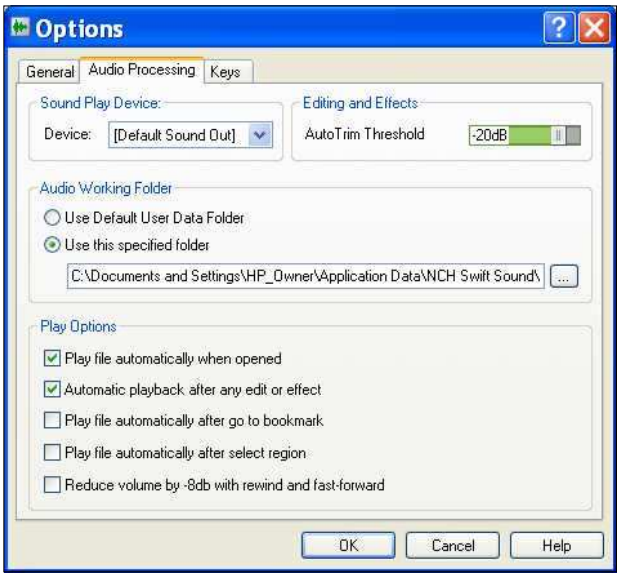


Fig 4. Set file saving location in Wavepad

We now need to set the parameters for making our recording. In the main program window click on the red record button seen at the bottom left. The box shown in fig 5 will appear. Select Stereo (Dual) and a sample rate of 44100. Click OK.

Fig 5. Set for recording.

The window shown in fig 6 will appear.

Fig 6. Setting the record controls.

In the Recording box set the Device to either Default sound in or to the name of the sound card fitted to your computer.

Set the Input to Windows Record Mixer using the dropdown arrow on the right hand side.

Then click on Open Windows Record Mixer in the Volume box. The window shown in fig 7 will (or should) appear.

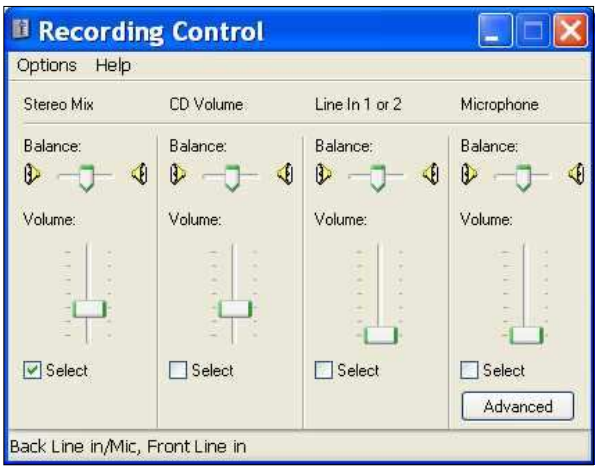


Fig 7. Windows Record Mixer. Recording Control.

What is shown in this window will very much depend on what sound card is fitted in your computer. If you plugged your tape recorder into a socket on the computer marked with a microphone it is a fairly safe bet that you will have to tick the Select box marked microphone. However, it may need some trial and error to choose the correct input source. If at first you don't succeed try another one.

My motto with computing is 'play and see what happens'.

We should now be in a position to start recording. Before we begin, an aside. In the days of recording to tape it was permissible to "over record" a little, i.e, the recording level meter could stray a little way into the red without too many ill effects. With digital recording straying into the red produces some nasty distortion so be very careful when making a recording to get your levels right.

In the Wavepad Record Control window Input box (Fig 6) choose the item that shows the source you selected in the Windows Recording Control box (Fig 7). The Volume box below the Input box should now show a slider that will enable you to set the input volume. Start your tape recorder playing.

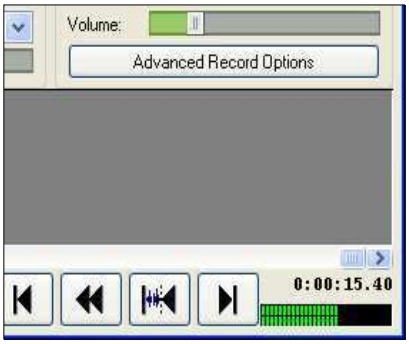


Fig 8. Recording level meter.

The input volume level meter should start showing green and probably red moving bars. If the red part of the bars are touching the right hand side of the box reduce the input volume level by moving the Volume slider to the left. If the recording level is still too high and you are using the headphone output from your tape recorder, reduce the volume control on your tape recorder. Once you have set the input volume level stop your tape and rewind to the start of the track that you want to record.

Right, let's make a recording.

In the Wavepad Record Control window click on the red record button, bottom left hand corner, and then start your tape recorder playing. The recording level meter should start responding. You may not hear any of the music at this stage, fear not, it should be recording. When you have reached the end of the track you wanted press the Stop button on the Wavepad transport control tool bar (black square) and stop your tape recorder.

The Wavepad Record Control window should look something like fig 9.

Fig 9. Showing that something has actually been recorded.

Press the go to start of track button (just to the right of the black square stop button) and then press the green play button. With any luck you should hear what you have just recorded.

Now press the red close button (top right hand corner) on the Record Control window. The recorded file should now be shown in the main Wavepad window. Very well done.

All that remains now is to edit out the silence at the beginning and end of the track and we are home and dry.

To remove the silence at the beginning of the track place your pointer just before the first peak of the music and, holding down the left hand mouse button drag the cursor to the beginning of the track. Let go of the mouse button and press the delete key on your keyboard. The unwanted part has now been removed. Repeat for any unwanted bits at the end of the track BUT dragging the cursor to the right hand end of the track.

Fig 10. Recorded track with left hand end selected for deletion.

It is now time to save your track as an MP3 file. Select File from the toolbar, select Save file, make sure that the file type is MP3, navigate to your chosen folder, give the file a name and hit the save button.

I am now going to lay down in a darkened room for a while.

Shortening a music track

Problem. The music that I want to use for my AV is too long. How do I make it fit the length of the AV.

Answer. Use Wavepad to chop a bit off of the end of the track. It's quite simple.

Open Wavepad. Go to File in the toolbar and select Open File. Navigate to the folder that contains your music file, highlight the file that you want and click Open. Wavepad will load the file and start to play it. Click the Stop button (black square in the transport control toolbar). You should now have a screen that looks similar to figure 11.

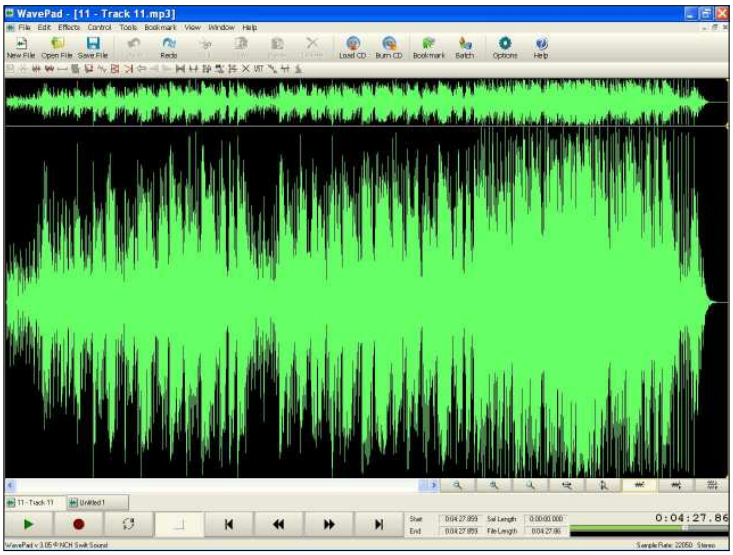


Fig 11. Wavepad with track ready for editing.

Assuming that you want to play the track from the beginning, place your cursor at the position on the track that corresponds to the required length of the music, say three minutes. This time is indicated at the bottom right of the screen in the box marked Start. Click and hold the left mouse button and drag the cursor to the end of the track. Let go of the mouse button. The selected area will be highlighted in blue as shown in figure 12. If the start of the selected area is not quite in the correct position place your cursor over the left hand side of the highlighted region until a horizontal line with two arrowheads appears. Click and hold the left mouse button and move the cursor until the correct time is indicated in the Start box. When correct, release the mouse button. Now press the Delete key on your keyboard. You should now have a track of the desired length.

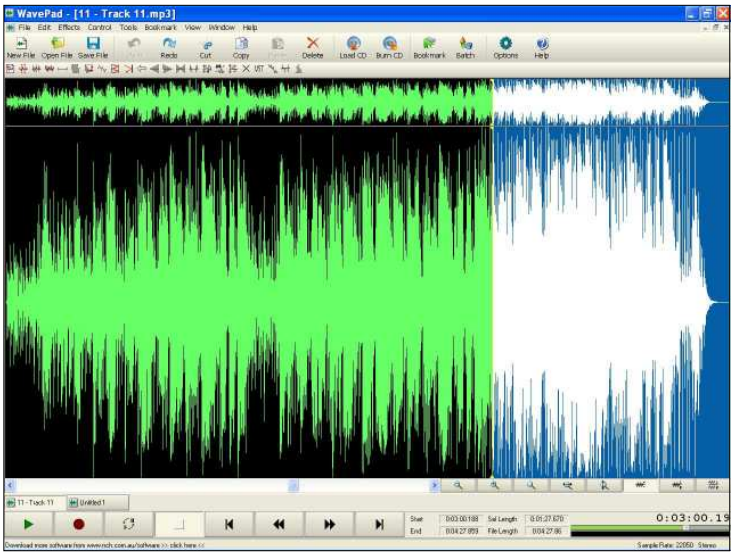


Fig 12. Right hand side of track selected prior to deletion.

Music that comes to an abrupt halt does not always sound good and so we need to fade-out the track. Select a region at the end of the track as described above. Five to ten seconds should make a good fade-out, but the choice is yours. With the area for fade highlighted in blue, select Effects from the toolbar and then click on Fade Out. Play the end of the track to see if it works as required. If not press Control + Z to undo the change, adjust the selected area and try again.

Field Recording

Making your own recordings for use in an AV is, in my opinion, the most satisfying way of producing a soundtrack. It is not the easiest way and it can be highly frustrating but well worth the effort. Even if you use music as the main component of your soundtrack it could well be enhanced by the addition of some sounds from the natural world or, in some cases, even from the un-natural world.

One of my heroes is sound recordist Chris Watson. He has worked on many television series including the David Attenborough “Life” series, the Galapagos series, he appeared on Bill Oddie goes Wild, Spring Watch and has done many radio programmes. The reason I mention him is because of his CD entitled “Weather Report”, which was named in The Guardian's 1000 Albums to Hear Before You Die List of 22.11.07. This CD shows how a soundtrack can evoke a feeling of place. The first eighteen minute track is a time compression of fourteen hours in Kenya’s Masai Mara. The second and third tracks, both of eighteen minutes duration, are recordings made in a Scottish highland glen and an Icelandic glacier as it flows into the Norwegian Sea. If you are at all interested in the sounds of nature try to hear this CD or, at the very least, have a look at Chris’s web site, www.chriswatson.net. Make sure you have the sound turn on. Do have a look at the Holystone field trip page, it’s not every day you hear a recording of falling snow!

Fancy a challenge? How about producing a soundtrack and then fitting pictures to it?

Before we dive into the wonderful world of sound recording I would like to mention a few things to be aware of.

Learn to listen. It can be incredibly noisy out there. So much so that we filter-out a lot of everyday background noise. Do we consciously hear traffic noise? Not very often. It can be very annoying to make a recording, get it home, play it back and find that some swine was using a chainsaw in the woods half a mile away. Traffic and the like is not the only extraneous noise to be aware of. We went to Wicken Fen in Cambridgeshire for a day out. It is a fairly quiet location so I made some recordings of the wind in the reeds, the birds and the insects. When I listened to them at home I found that I must have been very hungry on that day because the most dominant sound was that of my stomach rumbling. Hey-ho.

Do try to record the everyday sounds, they may be useful one day.

Treat your sound recording device as you would your camera. Take it with you when you take your camera and use it.

Enough of my ramblings. Let’s have a look at what we need and how it’s done.

Recording equipment

Recorders

There are three essential pieces of equipment that you will need. A recording machine of some description, a medium to store the recorded sounds and a microphone. The first dictates the second. I nearly missed the obvious, if you are going to make field recordings the recorder needs to be portable.

The trend these days is to use flash memory or hard disk recorders. Tape still has a place but can be a source of hiss on your recordings unless you spend a lot of money on the recorder or have very good noise reduction software.

Flash memory recorders appear to start at about £30 but there does not seem to be an upper limit on how much you can spend, a little like cameras really. My dream outfit would cost in the region of five thousand pounds.

Pictured below are four recording outfits that I know are in use in our club. The first is a system used by Dave Gillow. Details of the system are as follows.

Fig 13. Recorder and USB cable.

Fig 14. The recorder.

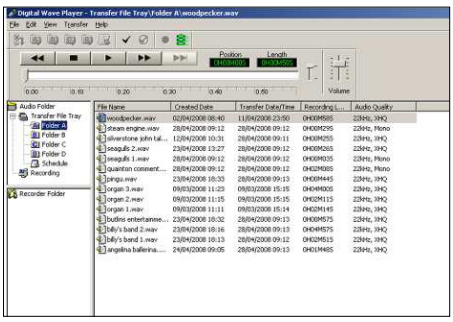


Fig 15. The associated software.

The device is an Olympus Digital Voice Recorder VN-4100PC
USB connection to PC producing .wav files
In XHQ (extra high quality - 300 to 7200 hz) record time is 11 hours 40 minutes
Battery life (alkaline) 25 hours
Built in microphone and loudspeaker
Microphone and ear sockets
Price about £30

Fig 16.
M-Audio Microtrack24/96

The following is one of my recorders.

Device M-Audio Microtrack 24/96. Now superseded by the Microtrack 2.
Recording medium Compact Flash cards. Record times dependant on card fitted and record quality settings.
Fitted with internal Lithium Ion battery.
Sockets for headphones and microphone (0.25” jack sockets).
Connects to PC via USB2 cable.
Supplied complete with stereo microphone, ear bud headphones and charger.
Cost Microtrack 2 about £199.

With the flash memory recorders files can be downloaded to your PC via USB, Fire-wire (depending on model) or the memory card can be removed from the recorder and plugged into the PC directly or via a card reader. This system is quick and easy.

Two of our club members, Roger and Paul, have recently bought the Zoom H2 portable recorder and have been reasonably please with the results they have obtained with it.
The Zoom H2 is very portable, records in stereo, uses compact flash memory cards, is powered by two AA batteries and, at the time of writing costs about £160.

Fig 17. The Zoom H2.

Fig 18. Zoom H2 with Compact Flash memory card.

Fig 19. Size comparison with compact camera.

Fig 20. Sony Mini Disc recorder.

The Mini Disk recorder shown below is used by at least two club members. However, with this model the recording has to be played back in real time and loaded into the PC in a manner similar to the method described earlier under the heading Obtaining a track from a tape recorder. Later mini disk recorders allow the transfer of recordings via USB.

Sony MD Walkman MZ-R70.
Now discontinued but may be available on the Internet. Recording media are mini-disks. These are similar to floppy disks (remember them?). Each replaceable disk gives 80 minutes recording time and they are rewriteable.

My recorder can be quite noisy when working so it is advisable to keep the recorder in your pocket or bag to avoid interference on your recording.

You will need to purchase a microphone to work with this type of recorder.

Microphones

Fig 21. ECM-MS907 microphone. Powered by AA bat.

Buy the best that you can afford but do make sure that it is compatible with your recorder.. Most microphones hiss to some extent, this, coupled with the low level noise from microphone pre-amplifiers, can be fairly intrusive on very quiet recordings. It can be quite difficult to remove the hiss from recordings (although some people are adept at taking the hiss) so try to avoid it in the first place by

purchasing a reasonable quality microphone. If possible, check the recorder/ microphone combination before you buy.

Some types of microphone (condensers) need to have a 48 volt bias applied to them before they will give a signal and lots of small recorders are not capable of providing this bias voltage so please check compatibility.

Fig 22. Rycote Windjammer and foam windshield. The foam windshield was supplied with the microphone.

You will also have to decide if you intend to record in mono or stereo. I would suggest that you record in stereo. You can always turn a stereo signal to mono but the reverse is not really an option if you want a convincing stereo image.

Since there are so many choices available to you when you buy a microphone I would strongly suggest that you speak to a specialist supplier before you make your decision. If they are any good they will be happy to advise you. I would suggest that you trawl the web for suppliers of audio equipment.

Fig 23. A nice safe little microphone, immune from the ravages of the wind.

While we are on the subject of microphones there is one thing I must mention, wind. Of course I get it but I don't suffer from it. That is, I have equipped myself with a dead cat. When making recordings in the open air it is more than likely that it will be windy and wind blowing across a microphone sounds very loud and not very pleasant. Hence the dead cat.

The little furry beast pictured left, fig. 22, is a Rycote Windjammer and I am going to refrain from comment on its name.

The idea of this extremely strokeable little object is to create an area of calm air around the microphone capsule and so reduce the buffeting noise. It works very well but, they are expensive. The Rycote systems and there are a few, range in price from about £25 to at least ten times that amount for a full basket system as seen on all good news outside broadcasts.

Given the price of these things it may be worth experimenting with making your own. Try using some fake fur and line it with satin. The fur needs to be fairly dense to be effective. You may get some funny looks in the shop but I suggest that you hold the material to your ear and give it a tweak to see if it makes a noise. I am sure the magistrate will understand.

Some things to consider when making a recording.

Let's state the obvious, the recording should be appropriate to your AV. The sound of steam trains does not readily fit with pictures of ducks.

Check for unwanted background noises. Be patient, you may have to wait for some time to get the right sounds. It's a bit like waiting for the right light when taking a picture.

If you are recording in stereo make sure the sense is correct. It looks odd if the pictures show an object moving left to right and its sound goes right to left.

Get as close as you can to your subject to ensure an adequate sound level.

Keep an eye on your recording levels and remember not to overload your recorder or you will get distorted sound.

Make at least twice the number of recordings that you think you will need and record everything. If you don't use it now you may well do sometime in the future.

Make notes about your recordings as soon as you finish them.

If you intend to record a commentary there are a number of things to consider.

Be aware of background noise. Someone putting away the saucepans will sound horrendous. Barking dogs, traffic, aircraft, fighting cats, washing machines, dishwashers, crying babies, boiling kettles, flushing lavatories, radios, humming computers, you name it, they will all intrude into your recording. Probably the most overlooked is a clock with a loud tick. If you have to edit the commentary and you *will* have to edit it, you will end up with a tick that is arrhythmic. After a minute or so of irregular ticking you will be climbing the wall but you may not be aware of what is getting to you!

Make sure that the person speaking the commentary is relaxed, they are less likely to stumble over their words which means less editing for you.

Try to get the person speaking the commentary to memorise the script. It is very difficult to make a voice-over sound natural if the words are being read-out from the printed page.

If a script is being used make sure that the pages are turned quietly, it is surprising how loud paper can be.

Make sure that both you and your speaker are wearing quiet clothing. This does not mean avoid loud colours, it means make sure they don't rustle. Remove all offending items, it's much more fun that way.

A method that Dave Gillow and I have found to work is to show the pictures to the speaker as they record the commentary. If you manually advance the images it is

easier to get a better synchronisation between words and pictures. Make sure that you don't record the noise of the mouse clicks (I've been there and they are difficult to get rid of).

Listen to the acoustic of the room that you are using for the recording. Try to find a fairly neutral or "dead" room, i.e., with little echo, it is easier to add a little reverberation at a later date than it is to try and reduce a noticeable echo.

Having made your recordings you will need to load them onto your computer. Be methodical. Give your recordings meaningful names or give them a serial number and enter the information into a spreadsheet or database. Unlike (most) pictures sounds can be hard to identify at a later date.

It is, of course, possible to plug a microphone into the sound card of your computer and record a commentary directly using a program such as WavePad, Wavosaur, Audacity, Reaper etc. There is a downside to this approach and that is the noise created by your computer. It is surprising just how much noise can be created by cooling fans and hard drives. However, if you do not have a recorder give this method a go.

To make your recording plug your microphone into the mic socket on your sound card and then open Wavepad. The method is the same as that described on page 5 with the following exceptions. With the New File window open, fig.5, click on mono. When you open the Recording Control, fig.7, select the Microphone. If the sound level is insufficient select the Advanced option and tick the boost option. Everything else is much the same except that instead of recording a music track you will have recorded your commentary. It takes some practice to get a good commentary recorded but persevere, you will get there eventually.

Editing a commentary.

However good your recording of the commentary it will probably need editing to a lesser or greater degree. It is a fairly easy process.

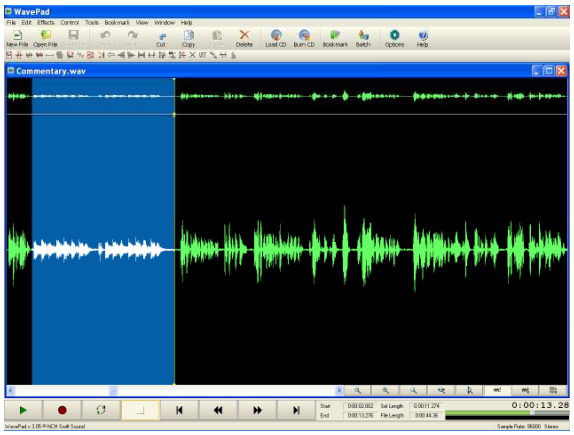


Fig. 24. Commentary opened in Wavepad with section for removal marked.

Open Wavepad and load your recording. Play-back your recording and make a note of the sections that need removing. Zoom in on the first section to be edited, see fig. 24. Place the cursor at the beginning of the section to be removed, left click and hold and drag to the end of the section to be removed. Press the delete key. Play that section of the recording to see if it sounds OK. If not select Edit, Undo (Control+Z) and have another go. Proceed to the next section to be removed and repeat the process. I suggest that you save the edited file with a different name so that you still keep your original file. You may need the original again sometime.
Right, that is the basics. Let's go and play with the big boys.

Creating a soundtrack using Reaper

Install Reaper as shown in the appendix. The first thing to note is that Reaper uses non-destructive editing. This means that you can modify recordings in the program without changing the original file, so long as you do not save over the original file.

Let's see what Reaper looks like on screen.

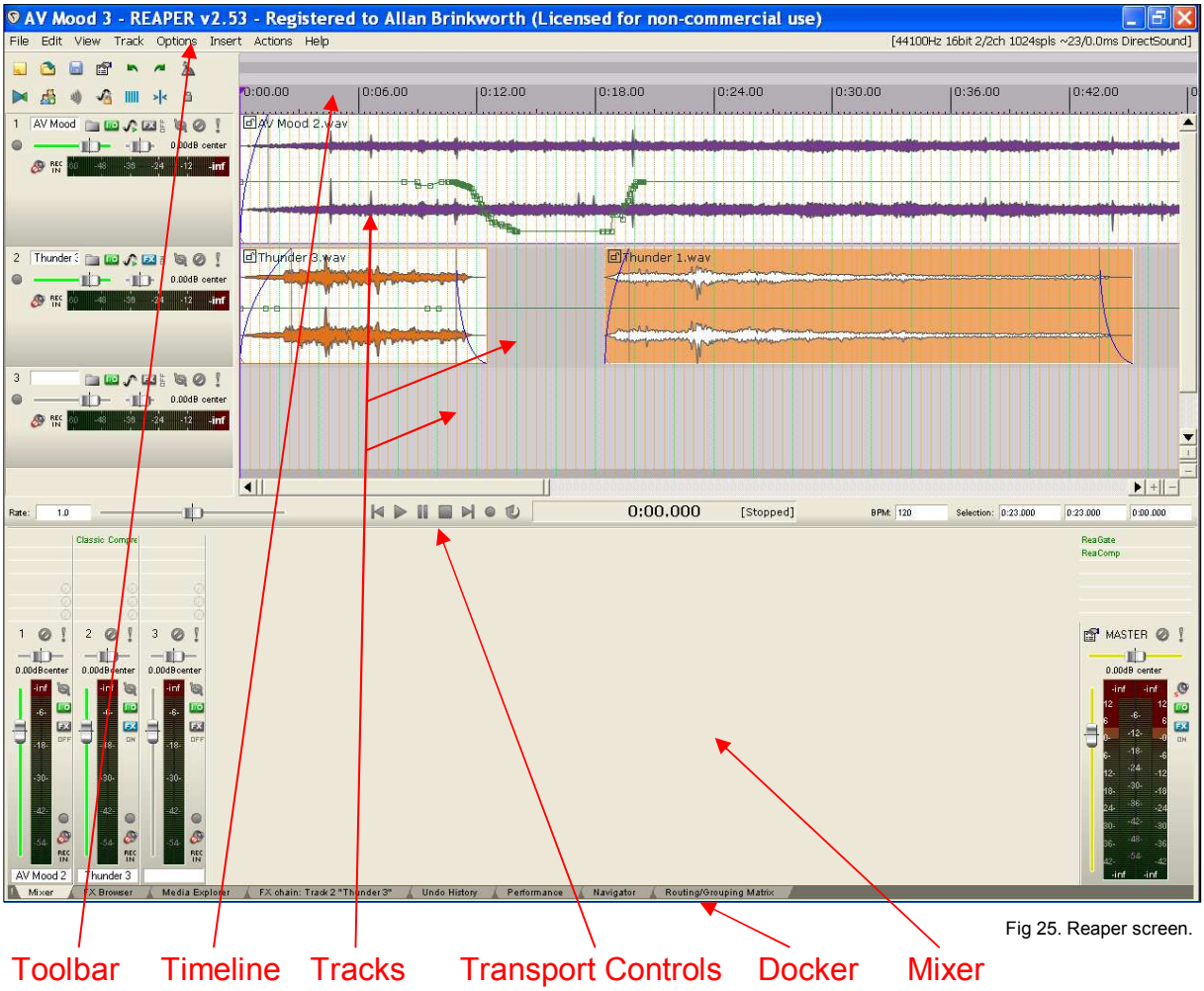


Fig 25. Reaper screen.

This may look a little intimidating to start with but, hopefully, things will become clearer as we go along.

I will assume that you have used Pictures to EXE (PTE) to assemble your images in the order you require. You should now get an idea of the timings involved. Take a note of the duration of each section of the sequence and jot down what sounds should accompany each section. This will help you assemble your sound track without too much switching between programs.

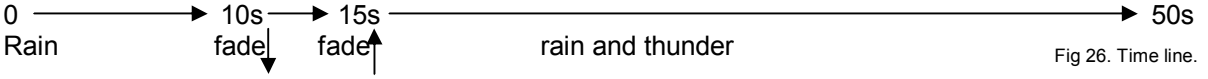
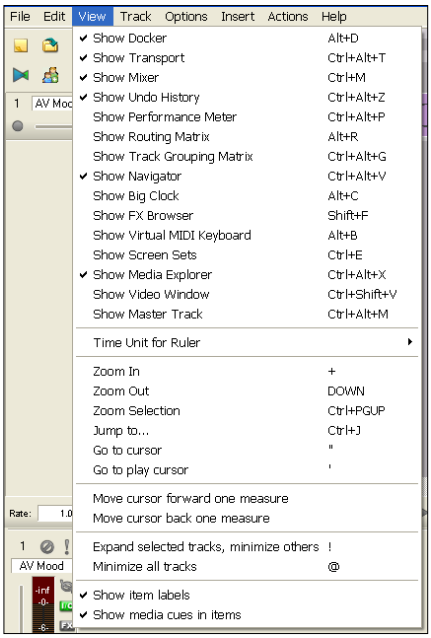


Fig 26. Time line.

Start Reaper by double clicking on its icon.

Open a new project by selecting File > New Project.

Click on View in the toolbar and tick the following items. Show Docker, Show Transport, Show Mixer, Show Undo History, Show Navigator and Show Media Explorer. Note, the drop down box will close after you tick an item so just click on View again and select the next item. The selected items will appear in the Docker at the bottom of the window, see fig 27 and fig 28.


File Edit View Track Options Insert Actions Help
Show Docker Alt+D
Show Transport Ctrl+Alt+T
Show Mixer Ctrl+M
Show Undo History Ctrl+Alt+Z
Show Performance Meter Ctrl+Alt+P
Show Routing Matrix Alt+R
Show Track Grouping Matrix Ctrl+Alt+G
Show Navigator Ctrl+Alt+V
Show Big Clock Alt+C
Show FX Browser Shift+F
Show Virtual MIDI Keyboard Alt+B
Show Screen Sets Ctrl+E
Show Media Explorer Ctrl+Alt+X
Show Video Window Ctrl+Shift+V
Show Master Track Ctrl+Alt+M
Time Unit for Ruler
Zoom In +
Zoom Out DOWN
Zoom Selection Ctrl+PGUP
Jump to... Ctrl+J
Go to cursor "
Go to play cursor '
Move cursor forward one measure
Move cursor back one measure
Expand selected tracks, minimize others !
Minimize all tracks @
Show item labels
Show media cues in items
Fig 27. View drop down menu.

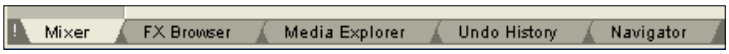


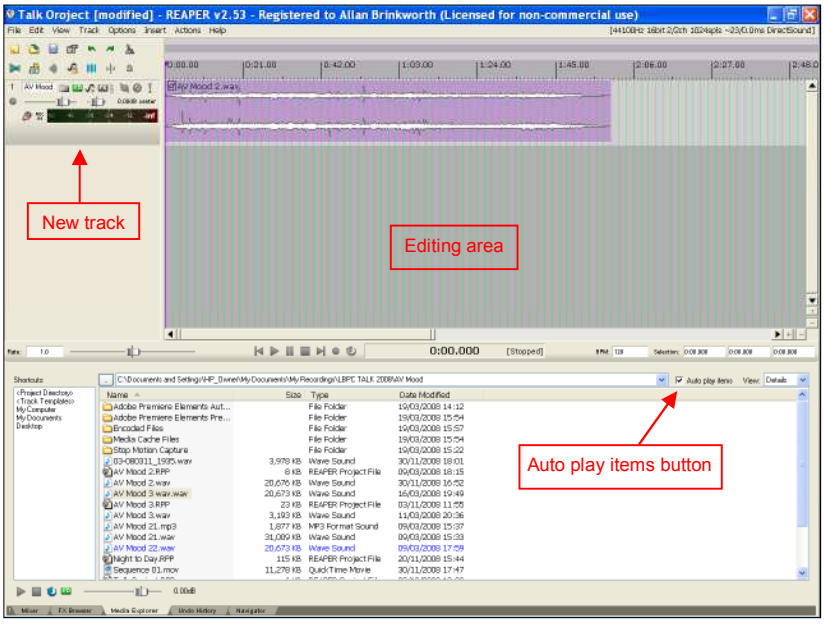
Fig 28. Docker tabs shown at the bottom of the main window.

Next, right click on the timeline (see fig 25) and select Minutes : Seconds from the popup box. This makes it a little easier to sort out timings.

We can now start to add recordings to our project.

Make sure that your loudspeakers or headphones are turned on.

Click on the Media Explorer tab in the Docker and navigate to the folder that contains the recordings that you want to use. Make sure that the Auto play items button is ticked. Click on the first recording that you want to use, it should start to play a preview. Click and hold on the recording in the Media Explorer and drag it into the editing (or more correctly the sequencing) area. A new track containing your recording will be created.


Talk Project [modified] - REAPER v2.53 - Registered to Allan Brinkworth (Licensed for non-commercial use)
New track
Editing area
Auto play items button
Fig 29. Media Explorer with first recording dragged into the first track.

To add additional recordings click on the next item in the Media Explorer and drag it up into the editing area and place it just below the first track. Let go of the mouse button and a new track will be created, containing your recording, below the first track. Continue to add your required recordings in this manner. It should be noted here that it is possible to add recordings to existing tracks. Click on an item in the Media Explorer and drag it onto an existing track. However, you should make sure it does not come to rest over an existing recording because it can get somewhat confusing.

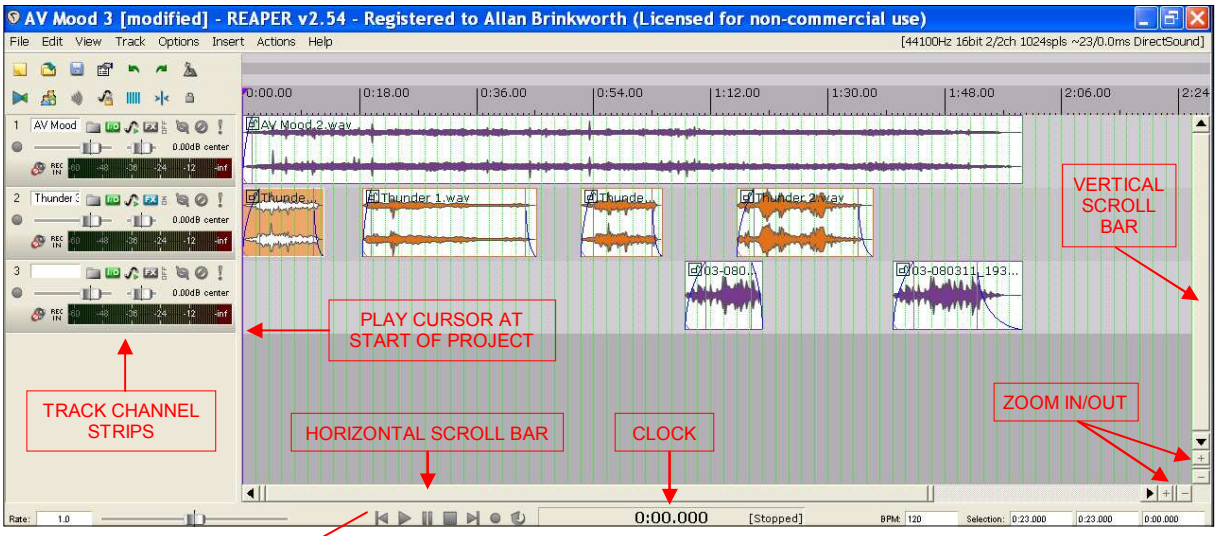

AV Mood 3 [modified] - REAPER v2.54 - Registered to Allan Brinkworth (Licensed for non-commercial use)
File Edit View Track Options Insert Actions Help
VERTICAL SCROLL BAR
PLAY CURSOR AT START OF PROJECT
TRACK CHANNEL STRIPS
HORIZONTAL SCROLL BAR
CLOCK
ZOOM IN/OUT
0:00.000
[Stopped]

Fig 30. Editing area with all required recordings added to tracks.

Fig 31. Transport Controls.

Figure 30 shows the editing area with all the recordings added to tracks. Note that some recordings have been added to existing tracks. If you now click on the Play button in the Transport Control (see figures 25 and 31) you should be able to hear the project that you have just created. Click on File > Save and save your project. Right, we are now cooking on charcoal but not yet gas.

This is a good place to give some hints on navigating around the screen. See figure 30 for locations of various tools.

To zoom in horizontally click on the + at the right hand end of the horizontal scroll bar. To zoom out click the –.
To zoom in vertically click the + at the bottom of the vertical scroll bar. When you zoom in the top track may disappear off the top of the screen so drag the scroll bar to bring it back down. To zoom out click the –.

The play cursor can be positioned by clicking in the edit area. You will notice that the cursor will snap to the nearest beat marker (if the grid is turned on). This can be a pain, so, click on Options in the top tool bar and select Snap/grid Settings and check (turn on) Show grid and uncheck (turn off) Enable snapping. The play cursor can now be positioned at will.

To start and stop playback tap the space bar.

Scrubbing. I will ignore all remarks. With playback stopped, click and hold on the top of the playback cursor in the time line (the pointer turns to a hand) and drag it side to side. Pressing and holding the Shift, Control or Alt keys modifies this action.

To Mute a track click this symbol.
To Solo (play on its own) a track click this symbol.
Pan sound in this track left or right.
Level meter.
Track volume.

Fig 32. Track channel strip controls.

Obviously we now have to get the timings correct. This where your list of timings comes into play (see figure 26 for an example). In this example I am using rain (track 1) as a background throughout this soundtrack with sections of thunder (track 2) and music (track 3) at various places.

To move an item (I shall use item from now on instead of recording because it is shorter and I'm idle) click and hold on it and drag it left or right until its left hand edge lines up with the required start time on the time line. Continue to adjust all of the items so that they start at the correct times. Helpful hint(?). To get the item in exactly the right position zoom in horizontally and place the play cursor where you want the item to start playing (check the time on the Clock) and drag the item up to the cursor.

Sounds that come in with a bang can be quite disturbing, useful in places, but generally best avoided. It is better to use a fade-in. This is easily achieved in Reaper. Place your cursor on the top, left hand corner of an item. The pointer will change to a quadrant of a circle with two little arrows pointing left and right. Click and hold and drag it to the right. A curved line should appear at the left hand side of the item box as in figure 33. Solo the track and play this item and you will be able to hear it fade in. A fade out can be achieved by clicking, holding and dragging on the top right corner of an item. The shape of the fade in or fade out can be changed by right clicking when the fade cursor is selected, see figure 34.

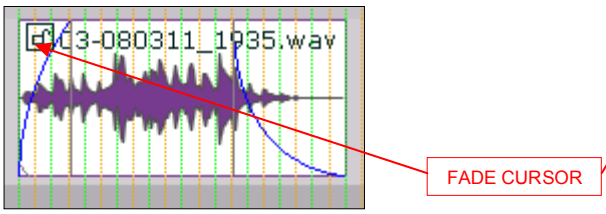


Fig 33. An item faded in and out

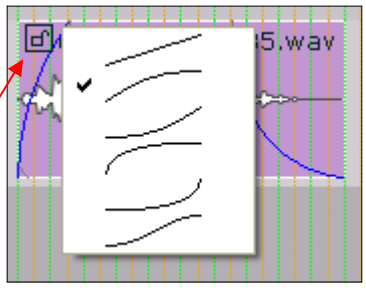


Fig 34. Fade in shapes.

It is very often the case that an item needs to be faded down and back up again at some point. Needless to say that this can be achieved in Reaper. I will endeavour to illustrate the easier way.

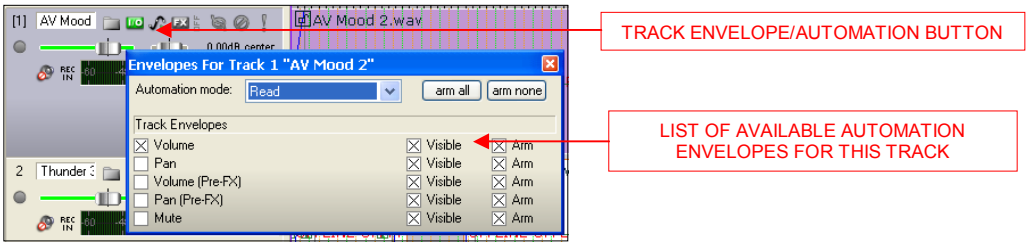


Fig 35. Track automation envelopes.

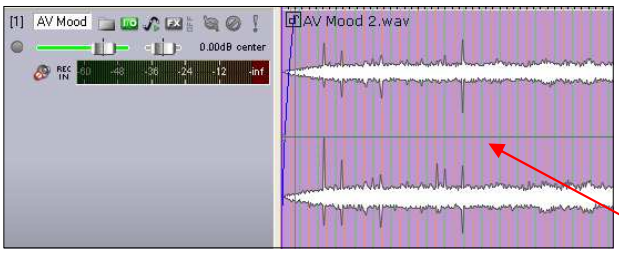


Fig 36. Track Volume Envelope.

In the track in which you want to adjust the volume click on the Track envelope/ automation button (figure 35) and check (select) Volume. A line should appear in the track as shown in figure 36.

Position your cursor just under this line at the point you want to start reducing the volume, the cursor should change to a small vertical arrow pointing upwards. Click once. A small square box should appear on the volume envelope. Now position the cursor just to the right of this point so that it changes to the arrow again, click, hold and drag down. The volume envelope should now slope down as shown in figure 37. Play this section of the project to check the result. Magic isn't it. To bring the volume up again position the cursor on the envelope to the right of the last point and click. Position to the right again, click and drag upwards until the pop-up box says 0.00dB and release the pointer. You now have a fade. To adjust the points place the cursor over the point to be moved, the pointer changes to a cross, click, hold and drag the point to its new position. Play the project to check the effect. Continue adding fades as required.

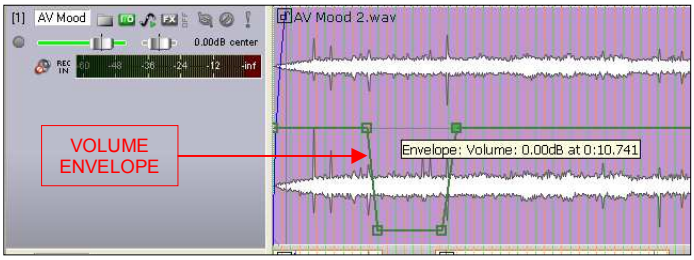


Fig 37. Volume envelope with fade points added.

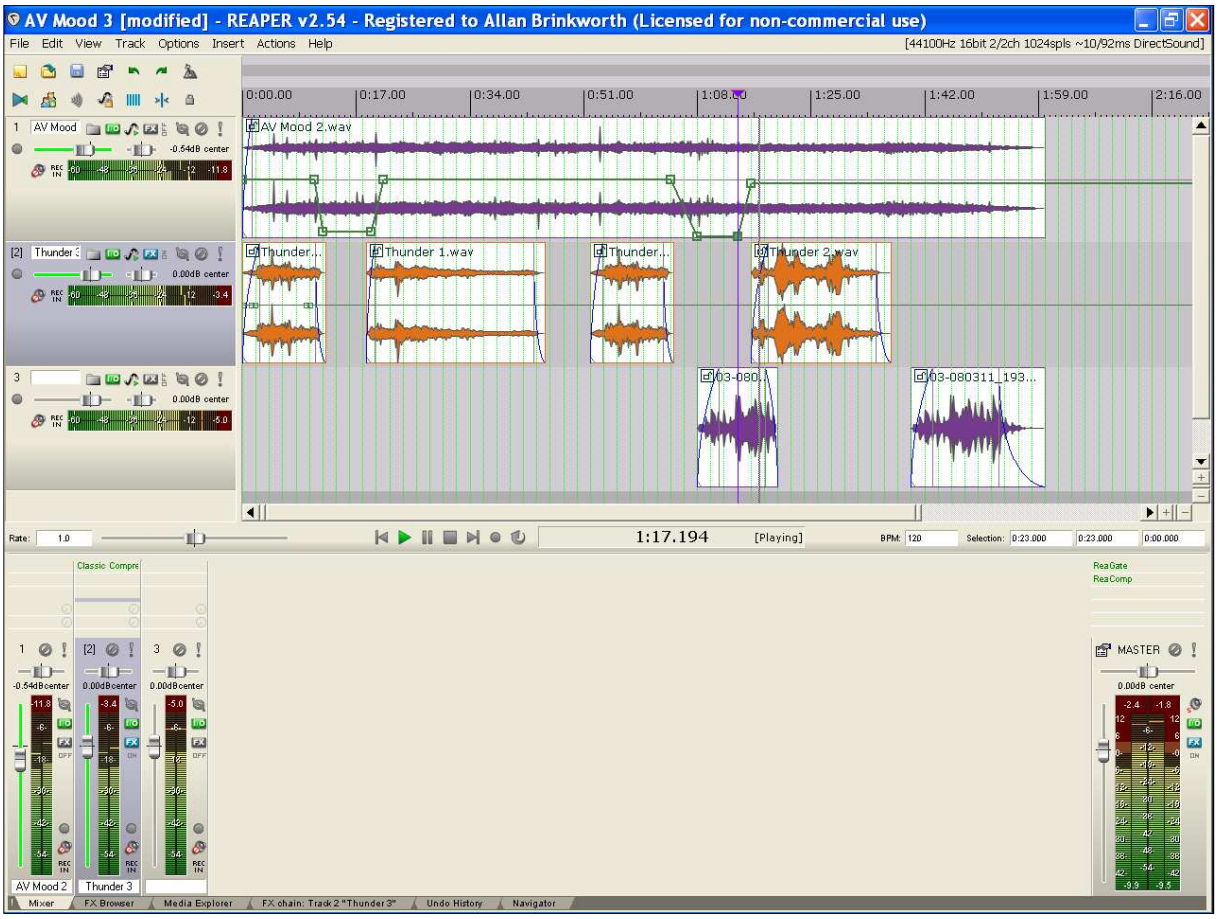

AV Mood 3 [modified] - REAPER v2.54 - Registered to Allan Brinkworth (Licensed for non-commercial use)
File Edit View Track Options Insert Actions Help
AV Mood 2.wav
Thunder 1.wav
1:17.194
[Playing]
MASTER

Fig 38. The finished project.

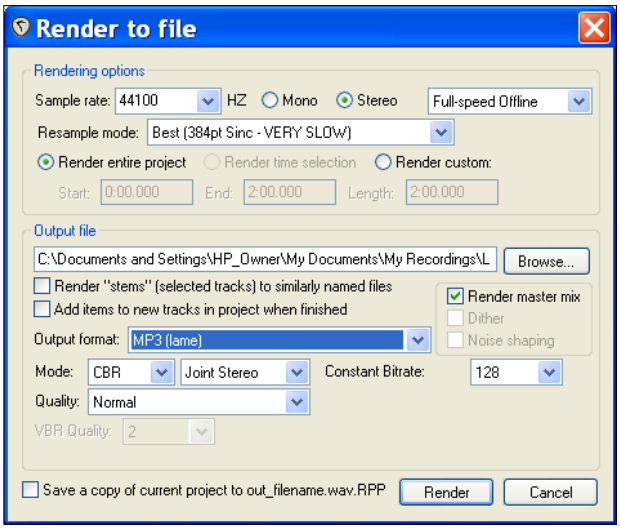
If you want to change the spatial position of a sound by panning it left or right repeat the above procedure but choose the Pan envelope instead of the Volume envelope. It helps if you hide the volume envelope by un-checking it in the Track Envelope box.

You may now have something that looks like figure 38. All recordings in the correct place and all fades added where required.

It is now crunch time. Does the soundtrack work with the pictures? To find out we need to render (export in a useable form) the project.

Save your project, File > Save or control and S.

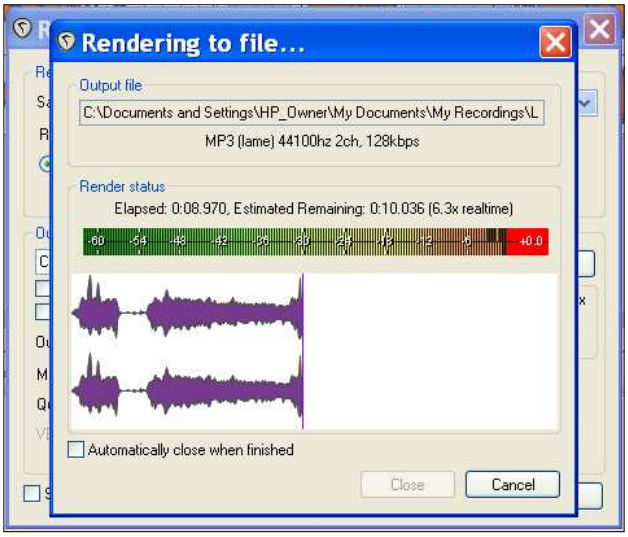
Select from the main toolbar File > Render. The box shown in figure 39 will appear.


Render to file
Rendering options
Sample rate: 44100 HZ Mono Stereo Full-speed Offline
Resample mode: Best (384pt Sinc - VERY SLOW)
Render entire project Render time selection Render custom:
Start: 0:00.000 End: 2:00.000 Length: 2:00.000
Output file
C:\Documents and Settings\HP_Owner\My Documents\My Recordings\L
Browse...
Render "stems" (selected tracks) to similarly named files
Add items to new tracks in project when finished
Render master mix
Dither
Noise shaping
Output format: MP3 (lame)
Mode: CBR Joint Stereo Constant Bitrate: 128
Quality: Normal
VBR Quality: 2
Save a copy of current project to out_filename.wav.RPP
Render
Cancel

Select settings as follows.
Sample rate, 44100 Hz Stereo.
Full-speed Offline.
Resample mode, Best.
Render entire project.
Output File, set location and name of file using the Browse button.
Render master mix.
Output format, MP3 (lame).
Mode, CBR Joint Stereo.
Constant bit rate, 128.
Quality, Normal.

Then click Render.

Fig 39. Rendering the project to an mp3 file.



The box shown in figure 34 will appear as Reaper converts your project to an mp3 file and writes it to disk. When the process is completed click on Close.

Congratulations! You have just produced your first soundtrack in Reaper. No doubt it will be the first of many.

Close Reaper, making sure that you have saved the latest version.

Open your AV program, add the soundtrack and run the AV.

Fig 40. Rendering the project to an mp3 file.

I can hear the cries now “Hold on, I didn’t get that last fade in the right place. Oh woe is me for I am undone”. Well do yourself up and don’t panic.

If the soundtrack is not exactly as you want open Reaper again, it should automatically load the last project you had open. Now make the necessary adjustments. Save the project and then render the project again. If you do not change the output file name it will overwrite the previous mp3 file with the new version (it will ask if you want to overwrite). In PTE you do not need to change the soundtrack file because the file name has not changed.

Continue this process ad nauseam.

Editing in Reaper

Non-destructive editing. As I have mentioned before Reaper uses non-destructive editing to create your project. When you drag an item from the Media Explorer into a track what you see on screen is a *representation* of the item (recording), *not* the original item. Therefore, if you change the characteristics of an item on screen you do not change the original recording. Let us say that you have shortened an item, Reaper will just use (play) the section of the recording you have chosen. So long as you do not overwrite, render, save or save as a file with the same file name as the original it will remain unchanged.

Using the Undo History. Click on the Undo History tab in the Docker. You will see a list of your previous actions. The latest action will be shown at the top of the list. Double clicking on any of the actions will return to that state. This really is a brilliant tool, get used to using it.

Moving an item. Click and hold on an item. Drag it left, right, up or down until it is in the correct place. Note. If you drag an item below the existing tracks a new track will be created.

Splitting an item. Highlight the item you wish to split by clicking on it, it should change colour. Position the play cursor where you want the split to occur and press S. The item will be split with the right hand section of the item highlighted. An alternative is to highlight the item, position the play cursor and then place your cursor over the item and right click. A menu will appear with many options available, one of which is split items at cursor. If you wish to join the two halves together again highlight both items and right click to bring up the menu. Select Heal splits in selected items. Alternatively use the Undo History.

Shortening an item. If you wish to shorten an item, either from the left or the right hand ends, place your cursor over the end of the item until it changes to a horizontal double ended arrow. Click and hold and drag the end into the item. Note. If you have set a fade in or fade out this will remain set as you shorten the item so play the item to see if it still makes sense.

Selecting a section of an item. If you only want a small section of an item proceed as follows. Highlight the item by clicking on it. Place your cursor on the time line (make sure it does not change to a hand) at the start of the section you require. Click, hold and drag the cursor to the end position of the section you require. This will set two markers with the section between them highlighted. Right click with your cursor over the item and select Trim items to selected area.

Deleting an item. Highlight an item by clicking on it and press the delete key.

Creating a new track. Press control and T.

Deleting a track. Click on the channel strip (that is the bit at the very left hand end of a track with the buttons, level meter and sliders), make sure it is highlighted and then press delete.

Moving a track. Click and hold on the channel strip of the track to be moved and drag it up or down.

There are many methods of editing in Reaper (as with cats and skinning) but the above should enable you to do most of the common tasks.

Remember my computing motto, if there is a button press it and see what happens.

Effects and processes in Reaper.

This is where the mucky stuff starts to creep over the top of my waders.

You may have noticed that when you click on the FX Browser tab in the Docker you see a vast array of names like those shown in figure 41. They are all effects, processors and instruments that can be applied to your recordings.

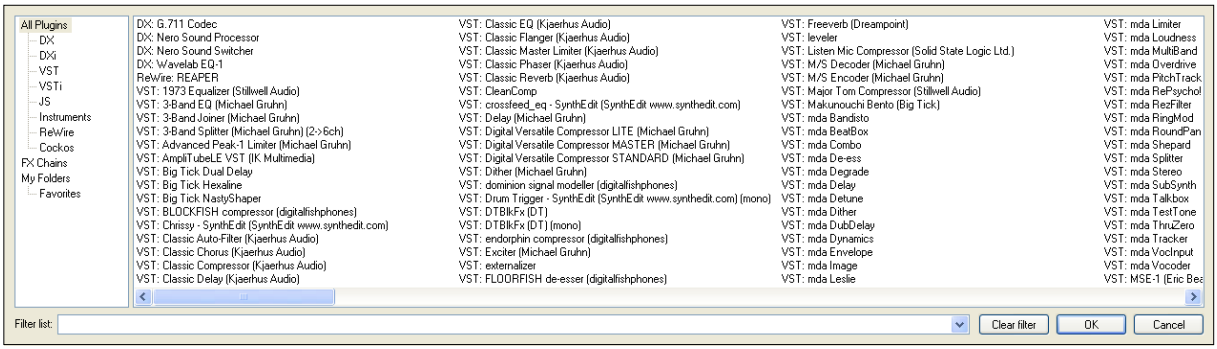


Fig 41. Just a few of the effects, processors and instruments that are provided with Reaper.

Fear not. There is no way I am going to explain them all because I have no idea what most of them do. I will try to explain the use of just three of them, a dynamics processor, a reverb and a compressor.

Applying effects and processes, general method. Effects can be applied to individual tracks or to the Master (final output) track. Effects applied to individual tracks will only affect the sounds on that track. If applied to the master track they will affect all of the sounds.

Applying an effect insert to an individual track via the channel strip, figure 42.

Click on the effects (FX) button. Two things will happen, the FX Chain box will open, figure 43 and the FX Browser will open in the Docker, figure 41. Highlight the effect you want to apply by clicking on it in the FX Browser and then click on Add in the FX Chain box. The effect will be applied to the selected track. Play to hear the effect.

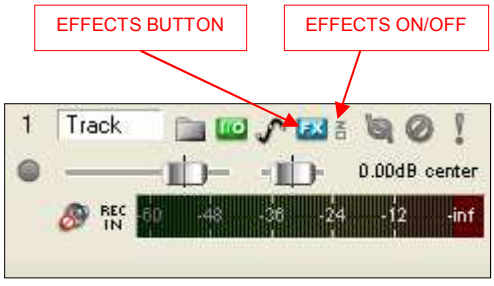


Fig 42. Channel strip for track 1.

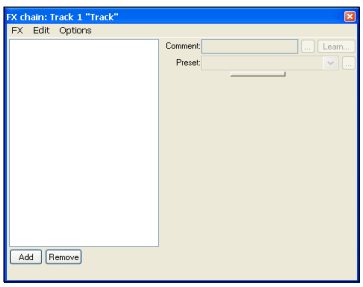


Fig 43. FX Chain menu.

A word here about the Mixer view. Click on the Mixer tab in the Docker and it will appear across the bottom half of the screen. The track channel strips will be shown on the left and the Master channel strip will be shown on the right. Figure 44 shows the Mixer somewhat modified from the conventional view. It has been un-docked and set up to show the Pan controls above the meters and at the top are shown Effects Inserts and below them are shown Sends.

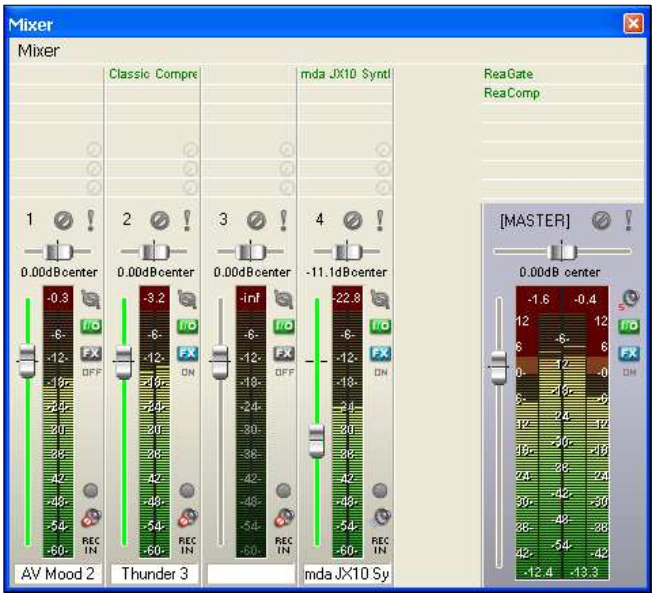


Fig 44. Mixer un-docked and with modified layout.

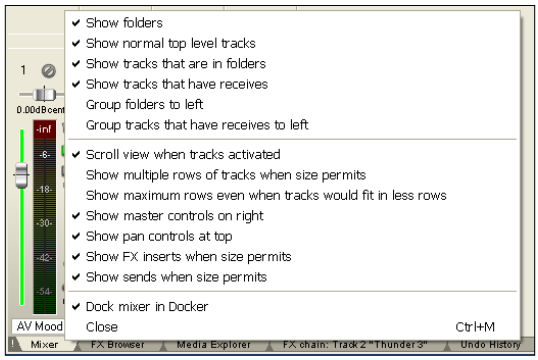

Show folders
Show normal top level tracks
Show tracks that are in folders
Show tracks that have receives
Group folders to left
Group tracks that have receives to left
Scroll view when tracks activated
Show multiple rows of tracks when size permits
Show maximum rows even when tracks would fit in less rows
Show master controls on right
Show pan controls at top
Show FX inserts when size permits
Show sends when size permits
Dock mixer in Docker
Close
Ctrl+M

Fig 45..Options for Mixer.

To set up the Mixer this way right click on the Mixer tab in the Docker, the menu box shown in figure 45 will appear. Un-tick the Dock Mixer in Docker and tick the four items immediately above it. The menu box will close after each selection, a pain, so right click on the tab to bring up the menu box again. If you want to dock the Mixer again right click on the blue bar at the top of the Mixer box and tick Dock Mixer in Docker. The un-docked Mixer can be dragged around the screen by clicking and holding in the blue bar at the top and dragging to a new position.

The main advantage of setting up the Mixer this way is that you can see what effect inserts have been added to each track, see figure 46. It is also the easiest way of showing the Master track.

Applying an effect insert or processor to the Master track.

With the Mixer on screen click on the FX button of the Master channel strip and then proceed as per a track effect insert.

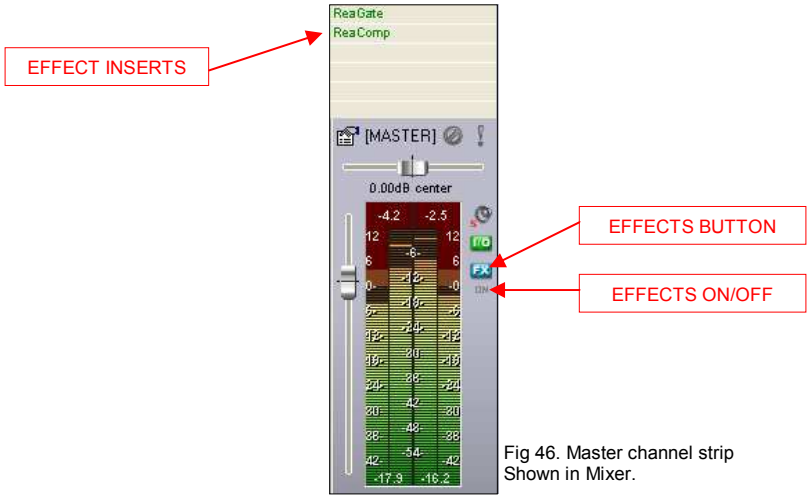


Fig 46. Master channel strip Shown in Mixer.

Applying a Dynamics Processor to a track.

Why should I want to do that? Good question, I'm glad you asked. It will enable you to remove, reduce or boost specific bands of frequencies within your recording. Let's say you have made a recording in the great outdoors on a windy day and you have a rumble caused by the wind blowing over the microphone. If you reduce the lower frequencies it will reduce the rumble. It may not remove it completely but it will lessen its impact.

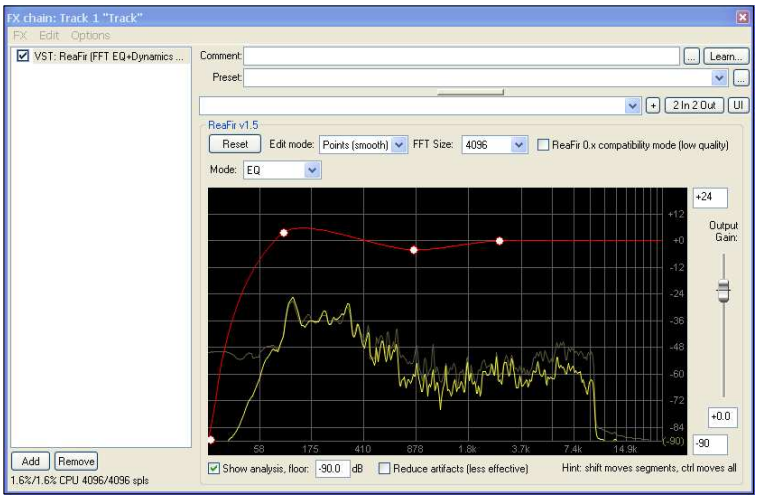


Fig 47. Cockos ReaFir Processor applied to a track.

In the example shown in figure 47 I have inserted the Cockos ReaFir (FFT EQ + Dynamics Processor) to a track. To find it in the FX Browser click on Cockos in the left hand box and a list of effects, processors and instruments (synthesisers) produced by Cockos will be listed.

Clicking on one of the white spots and dragging it down will reduce the level of the frequencies shown immediately below along the bottom of the graph. Additional points can be added to the red line by clicking anywhere along its length. With the recording playing you will see two waveforms, a light grey one and a brighter yellow one. The light grey one shows the frequencies and their levels in the original recording and the yellow one shows the modified output. Try turning the processor on and off to check its effect on the recording. Hint. Remember the on/off button under the FX button in the channel strip see figures 42 and 46.

Applying Reverb to a track.

Not another good question! If you remember what I said way back on page 14 about recording commentaries in a "dead" room and adding a little reverb later, well this is where we add said reverb. A reverberation will add a little "life" to a recording. Be careful though, it does not always sound natural and if you are going to add it make sure it is applied to everything that is meant to have been recorded at the same time.

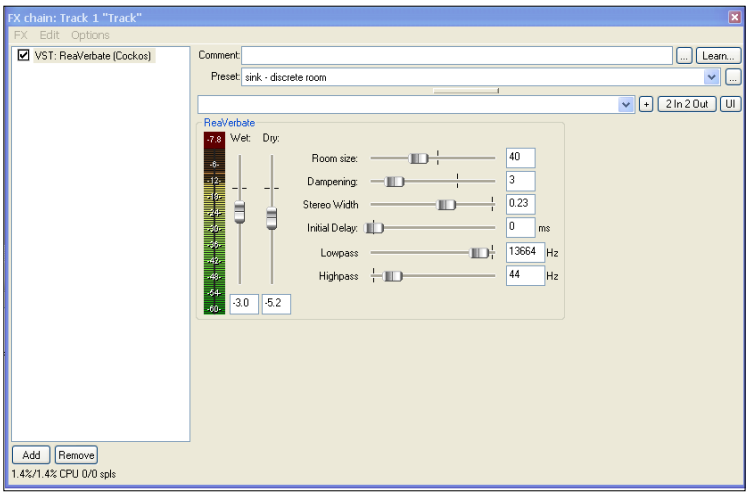


Fig 48. Cockos ReVerbate applied to a track.

Apply Cockos ReVerbate to the track. Click on the down arrow on Presets and load one that takes your fancy. Try them all. The degree of effect can be altered by adjusting the Wet/Dry balance. Have fun.

Adding a compressor to the Master track.

Herewith a very simplistic explanation of compression. A recording with a big difference between high volume and low volume is said to have a high dynamic range. In extreme cases the louds will be far too loud and the softs will be inaudible. A compressor will reduce the level of the loud passages, it evens out the volume levels. This means that you will be able to turn up the volume to hear the soft bits without the loud bits bursting your eardrums. Try listening to a classical concert on Radio 3 in the car. Unless you are driving a Roller it will be difficult to hear everything without playing with the volume. To the best of my somewhat limited knowledge, Radio 3 uses little or no compression. Now try listening to Classic FM. The problem is not so acute because they apply compression to their output.

The more compression you apply the less will be the dynamic range. In terms of digital images think of dragging the black and white points towards the middle in the levels adjustment tool. The tonal range is compressed.

I would suggest that the compressor is applied to the final output of your soundtrack. That is, apply the compressor in the Master track. Proceed as follows.

Open the Mixer by clicking on the Mixer tab in the Docker. Click the FX button on the Master channel strip (right hand side). Click on Cockos (left hand side) in the FX Browser and then choose VST: ReaComp (Cockos). When the compressor appears click on Preset and choose Master Bus NY Comp. This is one that I have found to work for me. Make sure Auto make-up and Limit output are ticked. Play your soundtrack. The amount of reduction being applied at any time will be shown by the left hand level meter (shown in dB).

I hope that you will be able to detect the difference that the compressor is making.

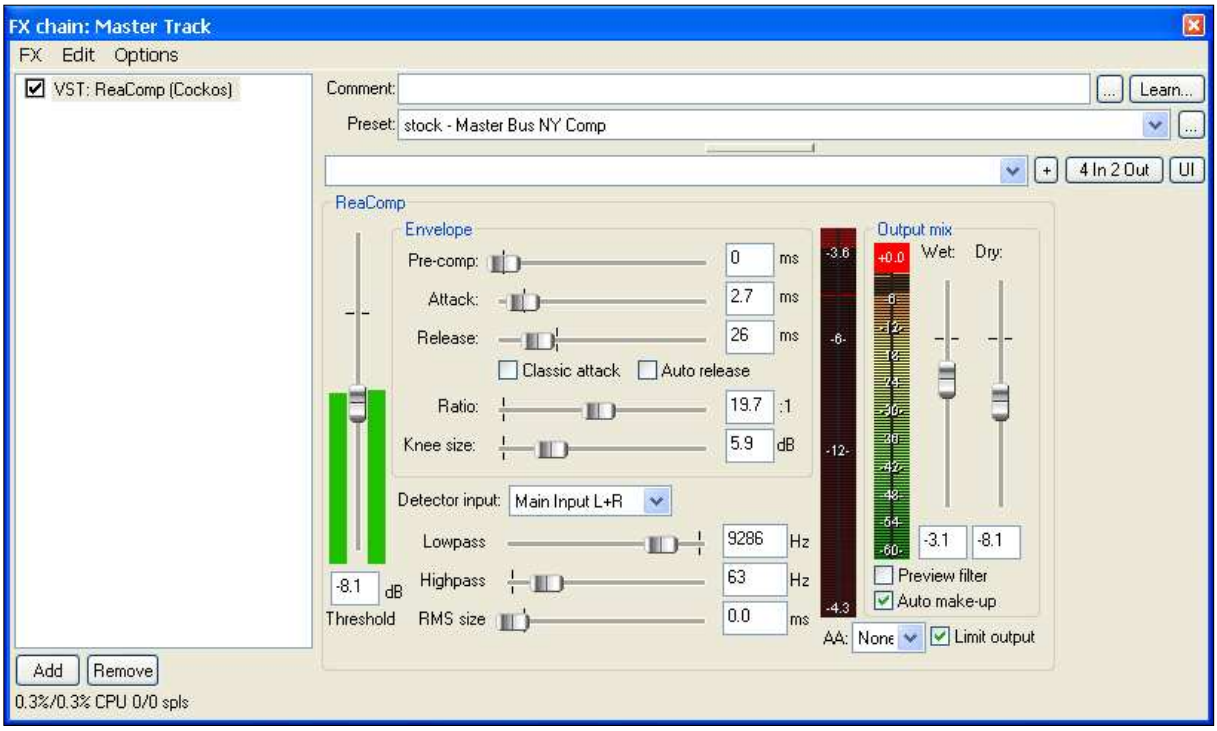


Fig 49. Cockos ReaComp compressor applied to the Master Track. At this instant it is showing a reduction of 3.6 dB on one of the loud bits.

Let's take a break from all this technical stuff and have a play.

Adding synthesised sounds to your soundtrack. Adding an Arctic Wind.

Start a new project. Right click in the channel strip area and select Insert virtual instrument on new track. A list of virtual instruments will be shown in the Docker. Select VSTi: mda JX10 synth. A new track will be inserted and the synthesiser will be shown in the FX box. Click on the down arrow on the right hand side of the third selection box from the top, scroll down until you see Arctic Wind and click on it. In the main toolbar click on View and select Show Virtual MIDI Keyboard (shortcut Alt B). Click on the notes of the MIDI keyboard. Voila, an arctic wind sound. If you want to record this sound make sure that the new track is armed for recording by checking that the Record Arm/Disarm button at the left hand side of the track channel strip is red. If it isn't click on it. Click on the Record button in the Transport Control. Reaper will start to record. Play note(s) on the MIDI keyboard. To stop recording click on stop (black square button) in the transport control. Try some of the other presets and instruments.

Using everyday sounds as notes on a keyboard.

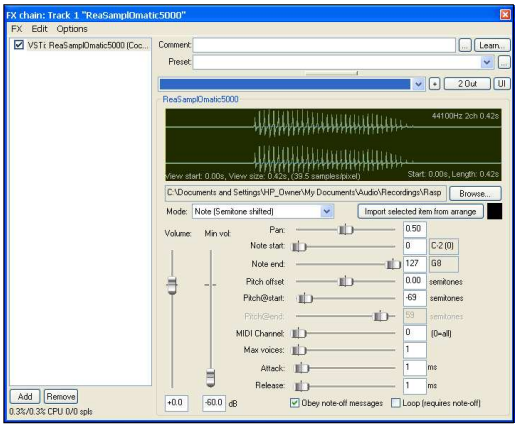


Fig 50. ReaSamplOmatic with sample loaded.

It is possible to set the MIDI keyboard to use common, or not so common, sounds as notes. Record short sounds, about a second or so, of things such as drips, clicks, raspberries etc. Insert a virtual instrument in a new track as described above. Select VSTi: ReaSamplOmatic 5000 as the virtual instrument. Click on Browse, navigate to your recordings and select one of the short samples. The one used here just happens to be a raspberry being blown (by mouth). Open the MIDI keyboard (Alt B) and play.

Speeding things up, slowing things down.

The Goons had this off to a fine art.

Start a new project and add the recording you want to play silly devils with. Click on view in the main toolbar and select Show Master Track. In the Master Track channel strip click on the Track Automation button, see page 17, and select Play Rate. You can now speed up or slow down your recording in a similar way to using the automation envelope for adjusting the volume. Refer to pages 18 and 19 to refresh your memory.

Conclusion.

I have barely scratched the surface of soundtrack production but I hope that these few notes have wetted your appetite to delve deeper into the wonderful world of sound.

May I suggest that you try to learn the basics of the programs that I have mentioned here and then go and play. So long as you have secure copies of your recordings I don't think you are going to screw-up things completely (ever the optimist).

Above all

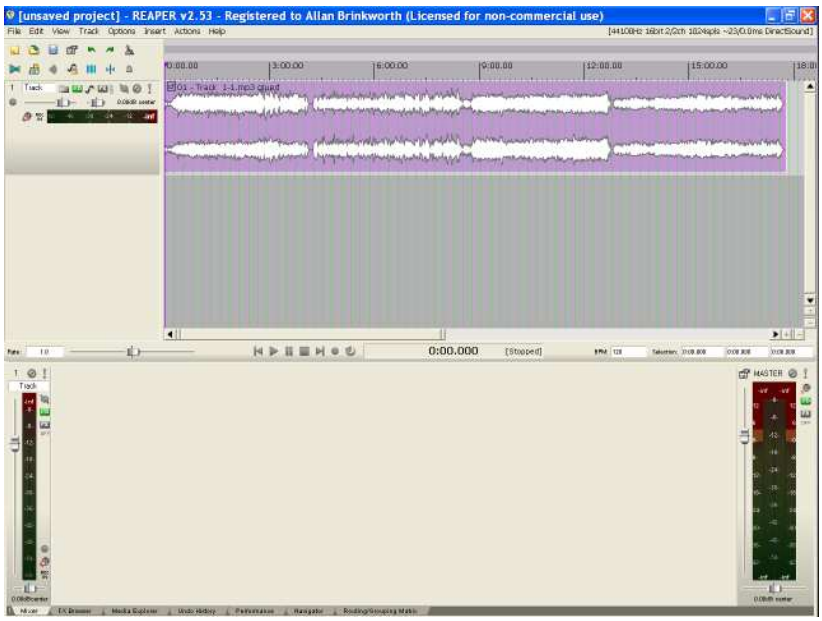
Appendix

Creating a CD from a REAPER project.
I have included this because I was asked if it was possible to create an audio CD from music recorded into Reaper from a cassette tape.

Sources of programs described in this document.

Creating a CD from a Reaper project.

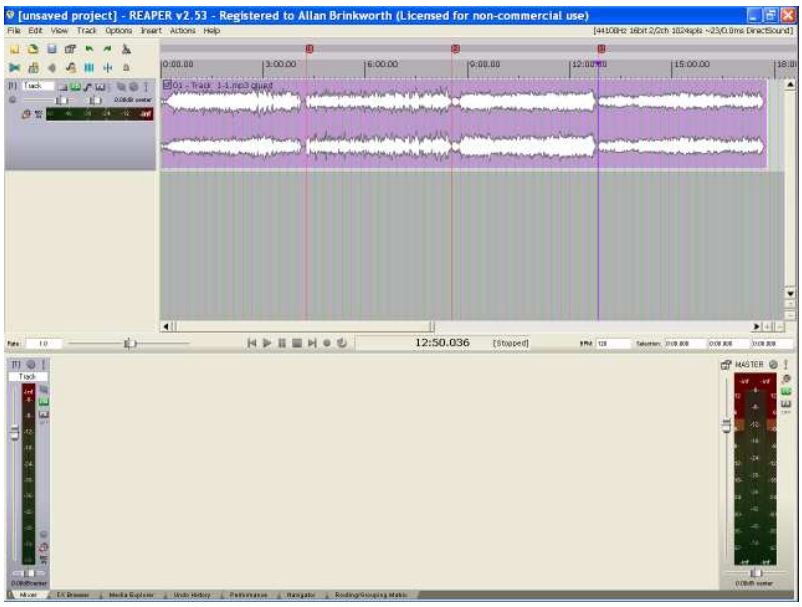
Record the music from tape into Reaper making sure that the peak volume stays at, or just below, 0dB (as shown on the recording bar graph). At the end of the recording it will ask if you want to save the file. Save it as a WAV file. This is your master file and should save you having to re-record if you make a pig's ear of the editing.



You should now have a screen that looks something like this.

If you want to remove some songs from the track do the following:
Place the cursor at the beginning of the song you want to cut out and press S, now place the cursor at the end of the song and press S, click on the song you want to remove to highlight it and press Delete. You now have a gap so click and hold on the right hand side of the track and drag it to the left so that it butts-up to the left hand side. Repeat this with any other songs you want to remove. You now have an edited track so press control-S to save the project. This will not affect your master WAV file.

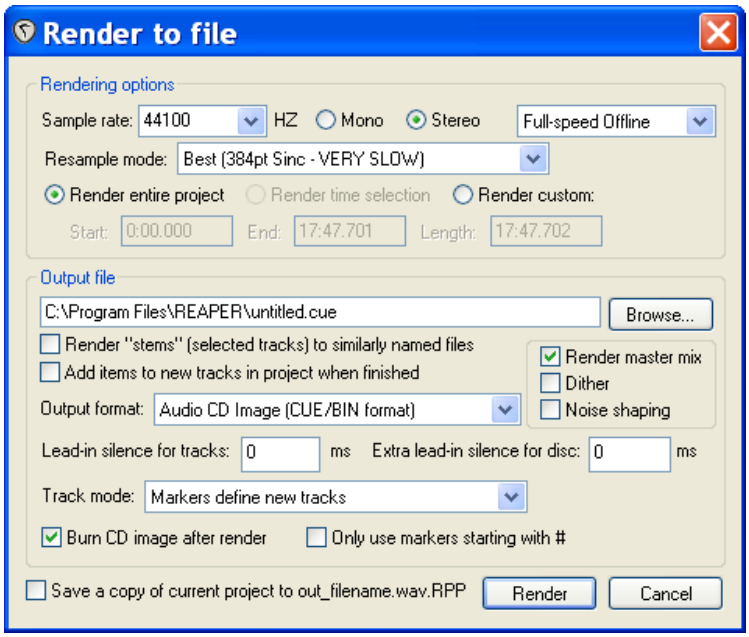
Now to create an audio CD.



We need to mark the start of each song as follows (it is not necessary to mark the start of the first song). Place the cursor at the start of the second song and press M, place the cursor at the start of the third song and press M, continue the mark the start of all remaining songs. The screen should now look something like this.

We can now start to write an audio CD.

Go to File>Render


Render to file
Rendering options
Sample rate: 44100 HZ Mono Stereo Full-speed Offline
Resample mode: Best (384pt Sinc - VERY SLOW)
Render entire project Render time selection Render custom:
Start: 0:00.000 End: 17:47.701 Length: 17:47.702
Output file
C:\Program Files\REAPER\untitled.cue
Browse...
Render "stems" (selected tracks) to similarly named files
Add items to new tracks in project when finished
Render master mix
Dither
Noise shaping
Output format: Audio CD Image (CUE/BIN format)
Lead-in silence for tracks: 0 ms Extra lead-in silence for disc: 0 ms
Track mode: Markers define new tracks
Burn CD image after render
Only use markers starting with #
Save a copy of current project to out_filename.wav.RPP
Render
Cancel

Setup the dialog box as shown here.

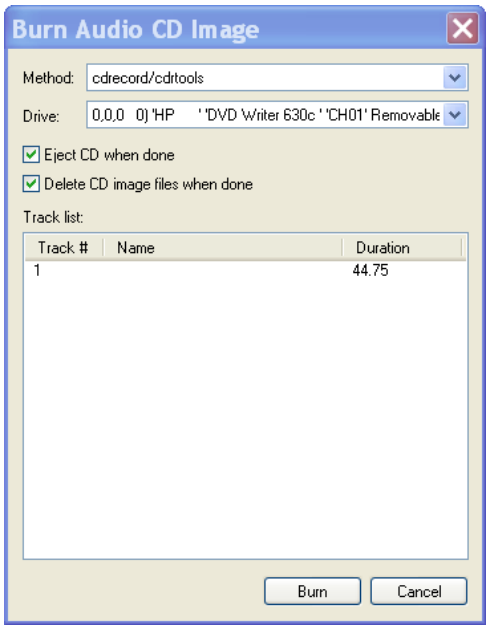
Make sure the Output format has been set to Audio CD Image (CUE/BIN format).

If you want to set a silent period before each song set Lead-in silence for tracks to one or two thousand milliseconds (one or two seconds).

Set the Track mode to Markers define new tracks (hence the setting of markers we did earlier).

Be sure to tick the Burn CD image after render box.

Place a blank CD in your disk drive.



When everything has been ticked or selected click on render.

The screen shown here should appear. Set the Method to cdrecord/cdrtools. Drive should automatically show your CD writing drive. Tick Eject CD when done and Delete CD image files when done boxes.

Click on Burn.

With any luck and a following wind you should now have a nice new audio CD of your favourite music.

Sources of programs.

AudioGrabber

http://www.audiograbber.com-us.net/

Wave Pad

http://www.nch.com.au/wavepad/kb/free.html

Reaper

http://reaper.fm/

Reaper User Guide (all 432 pages, 13MB, of it in PDF). Do have a look at this guide, it describes Reaper far better than I can.

http://reaper.fm/userguide/ReaperUserGuide25Eval.pdf